USER'S INFORMATION MANUAL

IBC

Better Boilers

VFC SERIES BOILERS

(Natural Gas or Propane)

WARNING: If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.

Do not store or use gasoline or other flammable vapours and liquids or other combustible materials in the vicinity of this or any other appliance.

WHAT TO DO IF YOU SMELL GAS:

- **Do not try to light any appliance.**
- **Do not touch any electrical switch; do not use any phone in your building.**
- **Immediately call your gas supplier from a nearby phone. Follow the gas supplier's instructions.**
- **If you cannot reach your gas supplier, call the fire department.**

Installation and service must be performed by a qualified installer, service agency or the gas supplier.

This Manual is also available in French - contact IBC or visit our web site www.ibcboiler.com

C ETL LISTED US Intertek

ENERGY STAR

AHRI CERTIFIED™

⚠ WARNING

If the information in this manual is not followed exactly, a fire or explosion may result causing property damage, personal injury, or loss of life.

SAFETY CONSIDERATIONS

Installation, start-up and servicing of IBC boilers must be done with due care and attention, and should only be performed by competent, qualified, licensed and trained heating technicians. Failure to read and comply with all instructions and applicable National and local codes may result in hazardous conditions that could result in property damage and injury to occupants which in extreme cases might result in death.

HAZARDS & PRECAUTIONS

⚠ DANGER

Points out an immediately hazardous situation which must be avoided in order to prevent serious injury or death.

⚠ WARNING

Points out a potentially hazardous situation which must be avoided to prevent serious injury or death.

⚠ CAUTION

Points out a potentially hazardous situation which must be avoided to prevent possible moderate injury and/ or property damage

⚠ NOTE

Points out installation, maintenance and operation details that will result in enhanced efficiency, longevity and proper operation of your boiler.

⚠ BEST PRACTICES

Points out recommendations for better installation.

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⚠ WARNING

HOT WATER CAN SCALD!

Water Temperatures over 125°F / 52°C can cause severe burns instantly or death from scalds.

Children, disabled, and elderly are at highest risk of being scalded.

- **Never leave then unattended in or near the shower, bathtub or sink.**
- **Never allow small children to use a not water faucet or draw their own bath.**

To avoid any potential scald hazard or if codes require specific water temperatures at the hot water faucet, the installer must:

- **Install a thermostatic mixing valve at the outlet of the Domestic Hot Water Indirect Water Heater outlet and ensure it is working properly.**

  AND
- **Set the thermostatic mixing valve to the lowest temperature which satisfies your hot water needs.**

TO AVOID INJURY:

- **Feel and adjust water temperature before bathing or showering.**
- **Water drained from the system drain valve may be extremely hot.**
- **Make sure all connections are tight.**
- **Direct water flow away from any person.**

⚠ WARNING

Close fill valve after any addition of water to the system, to reduce risk of water escapement.

⚠ WARNING

Water quality has a significant impact on the lifetime and performance of an IBC Boiler heat exchanger.

Improperly prepared water in a heating circuit may cause damage to the heat exchanger through corrosion or fouling. Repeated or uncontrolled water fills will increase the potential for damage.

High levels of dissolved solids or minerals may precipitate out of the fluid onto the hottest part of the heat exchanger, impairing heat transfer and resulting in overheating and premature failure. The amount of solids that may form on the heat exchanger will depend on the degree of hardness and the total water volume in the system. A high water volume system with a low hardness count may cause as much damage as a system with less volume and higher hardness, so it is recommended to treat water so as to remove all dissolved solids. Other water chemistry allowable limits are as follows:

- **Acidity pH is to be between 6.5 and 8.5**
- **Chloride is to be less than 125 mg/l**
- **Iron is to be less than 0.3 mg/l**
- **Cu less than 0.1 mg/l**
- **Conductivity is to be less than 400µS/cm (at 25°C)**
- **Hardness is to be 7 Grains or less**

IMPORTANT: Ensure that these limits are acceptable for the other water-side components in the system.

⚠ DANGER

Should overheating occur or the gas supply fails to shut off, do not turn off or disconnect the electrical supply to the pump. Instead shut off the gas supply at a location external to the appliance

⚠ WARNING

Do not use this boiler if any part has been under water. Immediately call a qualified service technician to inspect the boiler and to replace any part of the control system and any gas control that has been under water.

⚠ WARNING

Keep boiler area free and clear of combustible materials, gasoline, and other flammable vapours and liquids.

⚠ WARNING

Bacteria growth can develop in domestic hot water tanks and indirect water heaters if the minimum water temperature is not set high enough to prevent its growth.

⚠ WARNING

Combustion air must not be drawn from areas containing corrosive air from swimming pools or spas, including air directly next to outdoor pools and spas.

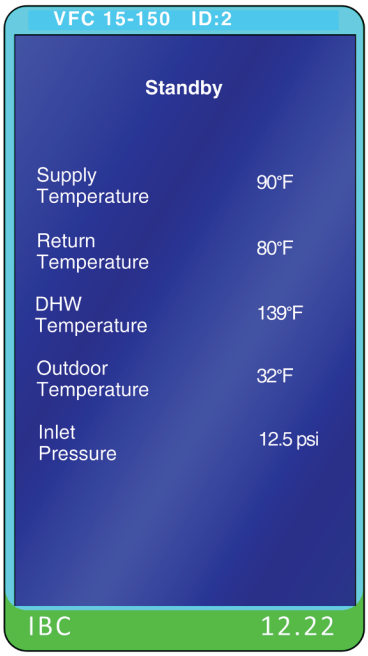
⚠ WARNING

The boiler shall not be exposed to water leaks from piping or components located overhead. This includes condensation dropping from un-insulated cold water lines overhead.

⚠ WARNING

In areas of high snow fall, users must check side wall exhaust vent and air intake terminations on a regular basis to ensure blockages do not occur.

IBC BOILER CONTROLLER



General

This boiler is equipped with the V-10 Touch Screen controller. The controller simplifies the programing of the boiler while providing greater flexibility. For more detailed instructions, reference the ***Touch Screen Boiler Controller Manual.***

The controller is equipped to provide:

- Control of up to 5 pumps – 1 boiler pump + 4 separate load pumps
- Outdoor Reset control
- Set Point temperature regulation
- Domestic Hot Water (DHW)
- External control via 0-10VDC or 4-20mA signaling
- Alarm dry contacts
- Load Combining – simultaneous operation of 2 similar water temperature loads
- The control can manage and/or operate in a network of up to 24 IBC VFC or SL boilers

Some of the new features available in the touch screen control include:

- Express Setup Menu for simple, quick programing
- Software updatable in the field with a SD card or a USB stick
- Setup configuration back-up and cloning using SD card or USB stick
- Superior warning messages while setting up the control
- Advanced Error messages with visual display on the Home Screen
- Internet/LAN connectivity
- BACnet (with activation)

Control

When the boiler is first energized, the controller will go through a power up sequence that will take approximately 90 seconds. During this time the controller is completing a self-diagnostic and loading all previous settings. In the event of a power interruption the boiler will automatically resume operation when power is restored with all the previously stored values. The controller provides overall management of the boiler operations including;

- Power-up, Self-diagnostics, easy Load parameter adjustments
- Burner operation, safety management systems, Call for Heat management and Load Priority
- Real time boiler data
- Temperature and throttle operation
- Maintenance of operational and error service logs
- 2-way communication between other IBC boilers and controls

Operational and historical data may be accessed at any time using the System Status and Load Profiles sections of the control. Error logs are available in the Diagnostics section and the controller is capable of recording any or all errors since original power-up complete with the date and time of the error.

⚠ WARNING

No sharp or metallic object should be used on the touch screen as this will cause damage. Use only a Stylus or a clean finger.

Control Interface

The control interface is provided through a 2-1/4 x 4 inch, color Touch Screen display. The Touch Screen responds to a light finger touch on the screen. You can also use a stylus or similar device to operate the touch controls. Do not use a sharp or metallic object such as a screw driver to operate the control as it could damage the touch screen.

The controller display is divided into two areas, the screen active area and the boiler status bar. All screens have an active area consisting of the screen title bar at the top and a boarder surrounding the active area. At the bottom of the display there is space reserved for the boiler status bar.

Prior to any interaction with the touch screen the display will be showing the Home screen that includes details of the current boiler status. If the controller has been left on the Home screen long enough (user adjustable, 10 minutes by default) the display with be dimmed to save power.

The control will automatically return to the home screen if left unattended. The screens will step back one screen at a time in 10 minute increments if the touch screen has not been touched. The pop-up windows will also step back automatically in 2 minute intervals.

The boiler status bar indicates if the boiler is in a normal, warning or alarm state. When no warning or alarm state is present, the bar will be green and the time will be displayed inside the green area. The bar can also be yellow or red corresponding a warning or alarm state. Text inside the bar will indicate the specific warning or alarm present. If more than one alarm is present the text display will slowly change, rotating though whatever alarms that are present.

LIGHTING AND SHUTTING DOWN THE BOILER

FOR YOUR SAFETY READ BEFORE OPERATING

WARNING: If you do not follow these instructions exactly, a fire or explosion may result causing property damage, personal injury or loss of life.

A. This appliance does not have a pilot. It is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.

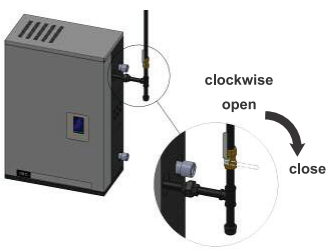
B. BEFORE OPERATING smell all around the appliance area for gas. Be sure to smell next to the floor because some gas is heavier than air and will settle on the floor.
   WHAT TO DO IF YOU SMELL GAS
   - Do not try to light any appliance.
   - Do not touch any electric switch; do not use any phone in your building.
   - Immediately call your gas supplier from a neighbor's phone. Follow the gas supplier's instructions.
   - If you cannot reach your gas supplier, call the fire department.

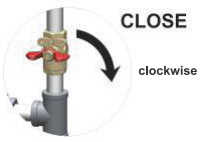
C. Use only your hand to turn the gas control valve. Never force using tools. If the valve will not turn by hand, don't try to repair it, call a qualified service technician. Force or attempted repair may result in a fire or explosion.

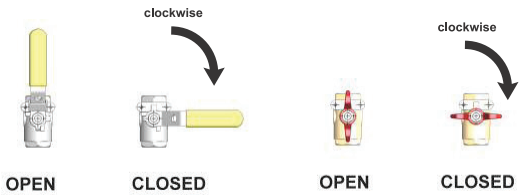
D. Do not use this appliance if any part has been under water. Immediately call a qualified service technician to inspect the appliance and to replace any part of the control system and any gas control which has been under water.

OPERATING INSTRUCTIONS

1. STOP! Read the safety information above on this label before doing anything.
2. Set the thermostat to lowest setting.
3. Turn off all electric power to the appliance by selecting main power switch to OFF.
4. This appliance is equipped with an ignition device which automatically lights the burner. Do not try to light the burner by hand.
5. Locate manual gas shut-off valve (see pictures below) and turn clockwise to "CLOSE".
6. Wait five (5) minutes to clear out any gas. Then smell for gas, including near the floor. If you smell gas, STOP! Follow step "B" in the safety information above on this label. If you don't smell gas, go to the next step.
7. Turn gas control valve to OPEN.
8. Turn on electric power to appliance by selecting main power switch to ON.
9. Set thermostat to desired setting.
10. If the appliance will not operate, follow the instructions "TO TURN OFF GAS APPLIANCE" and call your service technician or gas supplier.







TO TURN OFF GAS APPLICANCE

1. Set the thermostat to lowest setting.
2. Turn off all electric power to the appliance by selecting main power switch to OFF.
3. Turn gas control valve to CLOSE.

⚠ WARNING

Annual Maintenance must only be done by a qualified service technician.

⚠ CAUTION

The heat exchanger has a small amount of combustion chamber insulation (refractory), which contains ceramic fibers. When exposed to extremely high temperatures, the ceramic fibers, which contain crystalline silica, can be converted into cristobalite - which is classified as a possible human carcinogen.

Care should be taken to avoid disturbing or damaging the refractory. If damage occurs, contact the factory for directions. Avoid breathing and contact with skin and eyes and follow these precautions:

1. **For conditions of frequent use or heavy exposure, respirator protection is required. Refer to the "NIOSH Guide to the Selection and Use of Particulate Respirators Certified under 42 CFR 84" for selection and use of respirators certified by NIOSH. For the most current information, NIOSH can be contacted at 1-800-356-4676 or on the web at www.cdc.gov/niosh.**
2. **Wear long sleeved, loose fitting clothing, gloves and eyes protection.**
3. **Assure adequate ventilation.**
4. **Wash with soap and water after contact.**
5. **Wash potentially contaminated clothes separately from other laundry and rinse washing machine thoroughly.**
6. **Discard used insulation in an air tight plastic bag.**

NIOSH stated first aid:

- **Eye contact - Irrigate and wash immediately.**
- **Breathing - Provide fresh air.**

MAINTENANCE

Daily Maintenance

- Check the surrounding area – inspect for water leaks in the general area around the boiler and boiler piping
- Check the system pressure. The heating system pressure should normally not exceed 25psi and not drop below 10psi in most applications.VFC boilers are capable of handling up to 80 psi; ensure your qualified service technician makes a note of and explains your specific water pressure parameters if a higher pressure regime is used at the site. If the pressure is outside this normal range or if the water pressure fluctuates more than 2-3psi, contact your qualified service technician for service.
- Check the area around the boiler and the air intake opening for obstructions and chemical contaminates.

Monthly Maintenance

- Check all the Daily Maintenance items.
- Check the pressure relief valve and discharge piping for signs of leakage or moisture. If water or moisture is found, contact your qualified service technician as soon as possible for service.
- Check the condensate trap and outlet pipe. The condensate trap shall be full of water. The outlet hose may be connected to a condensate neutralizer, if so, check the pH of the water coming out of the neutralizer is above 6.0pH. If the pH is below 6.0 then the neutralizer will need to be re-charged or replaced. Contact your qualified service technician for service.
- Inspect the flue gas exhaust and air intake connections. All connections should be tight and leak free.
- Inspect flue gas exhaust piping, combustion air piping and terminations.

Annual Maintenance

The boiler must be inspected by your qualified service technician for the following:

- Check the Error Logs for any issues.
- Inspect the flue gas exhaust and air intake connections. All connections should be tight and leak free.
- Inspect flue gas exhaust piping, combustion air piping and terminations.
- Inspect the boilers interior and vacuum if required.
- Check for water, gas and condensate leaks in the boiler and around the boiler.
- Check the condensate trap and clean if required. Re-fill the trap and re-install the trap hook.
- Check the water pressure, expansion tank and pumps.
- Check the electrical connections.
- Check the ignition electrode and remove oxidation from the electrode. Replace if necessary.
- Check the gas valve and ignition cable.
- Check the controller settings.
- Check the burners flame. Should be a quick and quiet ignition across the full burner.
- If required, clean the heat exchanger and the burner.

⚠ CAUTION

Before testing the relief valve, make certain the discharge pipe is properly connected to the valve outlet and arranged to contain and safely dispose of equipment discharge.

⚠ WARNING

Do not use automotive-type ethylene or other types of automotive glycol antifreeze, or undiluted antifreeze of any kind. This may result in severe boiler damage. It is the responsibility of the Installer to ensure that glycol solutions are formulated to inhibit corrosion in hydronic heating systems of mixed materials. Improper mixtures and chemical additives may cause damage to ferrous and non-ferrous components as well as non-metallic, wetted components, normally found in hydronic systems. Ethylene glycol is toxic, and may be prohibited for use by codes applicable to your installation location. For environmental and toxicity reasons, IBC recommends only using non-toxic propylene glycol.

⚠ NOTE

Installers should inquire of local water purveyors as to the suitability of their supply for use in hydronic heating systems.

If water quality is questionable, a local water treatment expert must be consulted for testing, assessment and, if required, treatment.

Alternatively, water or hydronic fluid of known quality can be brought to the site.

Relief Valve - Maintenance and Testing

The relief valve manufacturer requires that under normal operating conditions a “try lever test” must be performed every two months. Under severe service conditions, or if corrosion and/or deposits are noticed within the valve body, testing must be performed more often. A “try lever test” must also be performed at the end of any non-service period.

Test at or near maximum operating pressure by holding the test lever fully open for at least 5 seconds to flush the valve seat free of sediment and debris. Then release the lever and permit the valve to snap shut.

If the lever does not activate, or there is not evidence of discharge, discontinue use of equipment immediately and contact a licensed contractor or qualified service personnel.

If the relief valve does not completely seal, and fluid continues to leak from the discharge pipe - perform the test again to try and flush any debris that may be lodged in the valve. If repeated tries fail to stop the leakage, contact a licensed contractor or qualified service personnel to replace the valve.

While performing a “try lever test”, a quantity of heat transfer fluid will be discharged from the piping system and the system pressure will drop. This fluid must be replaced. It is highly recommended that a system pressurization unit, such as an *Axiom Industries model MF200* be employed to refill and pressurize your system. Capture the discharged fluid in a container and recycle it by returning it to the system feeder unit. This is particularly important when your system contains treatment chemicals or glycol solutions. If the system employs plain water, the boiler auto fill valve must be turned on in order to recharge the lost fluid.

Blocked Vent Safety System

The boiler is equipped with a blocked vent safety system to prevent the boiler from operating in the event the boilers exhaust piping is blocked. The boiler will automatically stop operating when the restriction in the venting system becomes too restrictive. If the boiler shuts down due to a blocked vent, a qualified service technician must be called to inspect the boiler and venting system and correct the problem.

SERVICE RECORD

DATE	LICENSED CONTRACTOR	DESCRIPTION OF WORK DONE

NOTES

NOTES

The following message is relevant to users in the USA:

IMPORTANT

This Boiler is equipped with a feature that saves energy by reducing the boiler water temperature as the heating load decreases. This feature is equipped with an override which is provided primarily to permit the use of an external energy management system that serves the same function. THIS OVERRIDE MUST NOT BE USED UNLESS AT LEAST ONE OF THE FOLLOWING CONDITIONS IS TRUE:

- An external energy management system is installed that reduces the boiler water temperature as the heating load decreases.
- This boiler is not used for any space heating.
- This boiler is part of a modular or multiple boiler system having a total input of 300,000 BTU/hr or greater.
- This boiler is equipped with a tankless coil (not applicable to IBC's VFC boilers).

US installers should contact IBC for any further information required.

REVISION HISTORY

R1 (SEPTEMBER 2014)	Initial release
R2 (MAY 2015)	Address update

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